

WHAT IS CLAIMED IS:

1 1. An inductor device, comprising:
2 a first coil conductor located over a substrate and having a first conductivity and a
3 first pattern; and
4 a second coil conductor located on a substantial portion of said first coil
5 conductor, having a second conductivity substantially greater than said first conductivity,
6 and having a second pattern substantially conforming to said first pattern.

1 2. The inductor device as recited in Claim 1 wherein said first coil conductor
2 comprises one selected from the group consisting of:
3 a non-magnetic metal;
4 a non-magnetic metal alloy;
5 a magnetic metal;
6 a magnetic metal alloy;
7 doped polysilicon; and
8 a polycide conductor material.

1 3. The inductor device as recited in Claim 1 wherein said second coil conductor
2 comprises aluminum.

1 4. The inductor device as recited in Claim 1 wherein said second coil conductor
2 comprises an aluminum alloy.

1 5. The inductor device as recited in Claim 1 further comprising a patterned
2 passivation layer located over said first coil conductor and having at least one opening
3 exposing at least a portion of said first coil conductor, wherein said second coil conductor
4 contacts said first coil conductor in said at least one opening.

1 6. The inductor device as recited in Claim 1 further comprising:
2 a parallel coil separated from said first coil conductor by an insulator layer and
3 having a third pattern substantially conforming to said first pattern; and
4 a via extending through said insulator layer and connecting said first coil
5 conductor and said parallel coil.

1 7. The inductor device as recited in Claim 1 wherein said first pattern is a spiral
2 pattern having a shape selected from the group consisting of:
3 a square;
4 a rectangle; and
5 an octagon.

1 8. The inductor device as recited in Claim 1 wherein said second coil conductor has
2 a thickness of about 12,000 angstroms.

1 9. The inductor device as recited in Claim 1 wherein said inductor device has a
2 series resistance that is less than about 0.3 Ω .

1 10. The inductor device as recited in Claim 1 wherein said inductor device has a
2 quality factor of at least about 20.

1 11. A method of manufacturing an inductor device, comprising:
2 forming a first coil conductor over a substrate, said first coil conductor having a
3 first conductivity and a first pattern; and
4 forming a second coil conductor on a substantial portion of said first coil
5 conductor, said second coil conductor having a second conductivity substantially greater
6 than said first conductivity and having a second pattern substantially conforming to said
7 first pattern.

1 12. The method as recited in Claim 11 wherein said first coil conductor comprises
2 one selected from the group consisting of:
3 a non-magnetic metal;
4 a non-magnetic metal alloy;
5 a magnetic metal;
6 a magnetic metal alloy;
7 doped polysilicon; and
8 a polycide conductor material.

1 13. The method as recited in Claim 11 wherein said second coil conductor comprises
2 aluminum.

1 14. The method as recited in Claim 11 wherein said second coil conductor comprises
2 an aluminum alloy.

1 15. The method as recited in Claim 11 further comprising forming a patterned
2 passivation layer over said first coil conductor, said patterned passivation layer having at

3 least one opening exposing at least a portion of said first coil conductor, wherein said
4 second coil conductor contacts said first coil conductor in said at least one opening.

1 16. The method as recited in Claim 11 further comprising:
2 forming a parallel coil having a third pattern substantially conforming to said first
3 pattern;
4 forming an insulator layer over said parallel coil, wherein said insulator layer
5 interposes said first coil conductor and said parallel coil; and
6 forming a via extending through said insulator layer and connecting said first coil
7 conductor and said parallel coil.

1 17. The method as recited in Claim 11 wherein said first pattern is a spiral pattern
2 having a shape selected from the group consisting of:
3 a square;
4 a rectangle; and
5 an octagon.

1 18. The method as recited in Claim 11 wherein said second coil conductor has a
2 thickness of about 12,000 angstroms.

1 19. The method as recited in Claim 11 wherein said second coil conductor has a
2 thickness selected to provide a resistance equivalent to about 8,400 angstroms thick
3 copper.

- 1 20. The method as recited in Claim 11 wherein said forming said second coil
- 2 conductor includes depositing and etching a metal layer.

1 21. An integrated circuit device, comprising:
2 a substrate;
3 an inductor device, including
4 a first coil conductor located over said substrate and having a first
5 conductivity and a first pattern, and
6 a second coil conductor located on a substantial portion of said first coil
7 conductor, having a second conductivity substantially greater than said first conductivity,
8 and having a second pattern substantially conforming to said first pattern;
9 an active device located in said substrate; and
10 interconnects coupling said active device and said inductor device.

1 22. The integrated circuit device as recited in Claim 21 wherein said first coil
2 conductor comprises one selected from the group consisting of:
3 a non-magnetic metal;
4 a non-magnetic metal alloy;
5 a magnetic metal;
6 a magnetic metal alloy;
7 doped polysilicon; and
8 a polycide conductor material.

1 23. The integrated circuit device as recited in Claim 21 wherein said second coil
2 conductor comprises aluminum.

1 24. The integrated circuit device as recited in Claim 21 wherein said second coil
2 conductor comprises an aluminum alloy.

1 25. The integrated circuit device as recited in Claim 21 wherein said inductor device
2 further includes a patterned passivation layer located over said first coil conductor and
3 having at least one opening exposing at least a portion of said first coil conductor,
4 wherein said second coil conductor contacts said first coil conductor in said at least one
5 opening.

1 26. The integrated circuit device as recited in Claim 21 wherein said inductor device
2 further includes:
3 a parallel coil separated from said first coil conductor by an insulator layer and
4 having a third pattern substantially conforming to said first pattern; and
5 a via extending through said insulator layer and connecting said first coil
6 conductor and said parallel coil.

1 27. The integrated circuit device as recited in Claim 21 wherein said first pattern is a
2 spiral pattern having a shape selected from the group consisting of:
3 a square;
4 a rectangle; and
5 an octagon.

1 28. The integrated circuit device as recited in Claim 21 wherein said second coil
2 conductor has a thickness of about 12,000 angstroms.

1 29. The integrated circuit device as recited in Claim 21 wherein said inductor device
2 has a series resistance that is less than about 0.3 Ω .

- 1 30. The integrated circuit device as recited in Claim 21 wherein said inductor device
- 2 has a quality factor of at least about 20.

1 31. An inductor device comprising:
2 a substrate;
3 a first metal layer comprising
4 a first conductor formed in a closed pattern on said substrate, and
5 a first metal interconnect feature on said substrate;
6 a first dielectric formed atop said first conductor;
7 a first coil conductor formed on said first dielectric layer in a closed pattern
8 substantially overlying said first conductor and being in electrical contact with said first
9 conductor;
10 a passivation layer formed atop said first coil conductor; and
11 a second coil conductor formed on said passivation layer in a closed pattern
12 substantially overlying said first coil conductor and being in electrical contact with said
13 first coil conductor.